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State Common Entrance Test Cell,
Maharashtra State

MHT CET 2020 Question Paper

PCM

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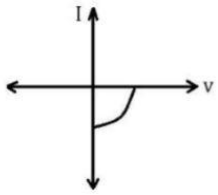
Test Center Name:	RMD Sinhgad School of Engineering
Test Date:	19/10/2020
Test Time:	9:00 AM - 12:00 PM
Subject:	PCM

Section : **Physics**

Q.1 I-V characteristics for a junction diode is shown. The device is



Ans

✗ 1. LED.

✓ 2. solar cell.

✗ 3. photo cell.

✗ 4. zener diode.

19.

Question Type : **MCQ**
Question ID : **37135117046**
Option 1 ID : **37135168182**
Option 2 ID : **37135168181**
Option 3 ID : **37135168183**
Option 4 ID : **37135168184**
Status : **Answered**
Chosen Option : **4**

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Q.2 An alternating current of frequency 50 Hz has the peak value as 14 · 14 A. The time taken by the alternating current in reaching from zero to maximum value and r.m.s. value of current will be respectively

Ans

✗ 1. 0 · 025 s, 5A

✗ 2. 0 · 005 s, 5A

✓ 3. 0 · 005 s, 10A

✗ 4. 0 · 025 s, 10A

16

Question Type : **MCQ**
Question ID : **37135117008**
Option 1 ID : **37135168029**
Option 2 ID : **37135168030**
Option 3 ID : **37135168031**
Option 4 ID : **37135168032**
Status : **Answered**
Chosen Option : **3**

Q.3 A shell of mass 'M' initially at rest suddenly explodes in three fragments. Two of these fragments are of mass '$M/4$' each, which move with velocities 3 ms^{-1} and 4ms^{-1} respectively in mutually perpendicular directions. The magnitude of velocity of the third fragment is

Ans

✗ 1. 3 · 0 ms^{-1}

✓ 2. 2 · 5 ms^{-1}

✗ 3. 1 · 5 ms^{-1}

✗ 4. 2 · 0 ms^{-1}

23

Question Type : **MCQ**
Question ID : **37135117037**
Option 1 ID : **37135168148**
Option 2 ID : **37135168147**
Option 3 ID : **37135168145**
Option 4 ID : **37135168146**
Status : **Answered**
Chosen Option : **2**

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Q.4 A satellite of mass 'm' is revolving around the earth of mass 'M' in an orbit of radius 'r' with constant angular velocity 'ω'. The angular momentum of the satellite is (G = gravitational constant)

Ans

1. $m\,(GMr)$

2. $m\,(GMr)^{1/2}$

3. $(GMmr)^{1/2}$

4. $\left(\frac{GMr}{m}\right)^2$

2

Question Type : **MCQ**
Question ID : **37135117049**
Option 1 ID : **37135168193**
Option 2 ID : **37135168194**
Option 3 ID : **37135168195**
Option 4 ID : **37135168196**
Status : **Answered**
Chosen Option : **2**

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Q.5 A thin metal rod of mass 'M' and length 'L' is cut into 4 equal parts by cutting it perpendicular to its length, If moment of inertia of the rod about an axis passing through its centre and perpendicular to its axis is 'I' then moment of inertia of each part about the similar axis is

Ans

✗ 1. $\frac{I}{16}$

✗ 2. $\frac{I}{32}$

✗ 3. $\frac{I}{128}$

✓ 4. $\frac{I}{64}$

3

Question Type : **MCQ**
Question ID : **37135117025**
Option 1 ID : **37135168100**
Option 2 ID : **37135168098**
Option 3 ID : **37135168097**
Option 4 ID : **37135168099**
Status : **Answered**
Chosen Option : **4**

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Q.6 Young's double slit experiment is performed in water, instead of air, then fringe width

Ans

✔ 1. decreases.

✘ 2. becomes infinite.

✘ 3. increases.

✘ 4. remains same.

1

Question Type : **MCQ**
Question ID : **37135117029**
Option 1 ID : **37135168116**
Option 2 ID : **37135168115**
Option 3 ID : **37135168114**
Option 4 ID : **37135168113**
Status : **Answered**
Chosen Option : **1**

Q.7 A particle executes uniform circular motion with angular momentum 'L'. Its rotational kinetic energy becomes half, when the angular frequency is doubled. Its new angular momentum is

Ans

✘ 1. $2L$

✘ 2. $\frac{L}{2}$

✘ 3. $4L$

✔ 4. $\frac{L}{4}$

3

Question Type : **MCQ**
Question ID : **37135117040**
Option 1 ID : **37135168158**
Option 2 ID : **37135168159**
Option 3 ID : **37135168157**
Option 4 ID : **37135168160**
Status : **Answered**
Chosen Option : **4**

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Q.8 When a mass 'm' is suspended from a spring of length 'ℓ', the length of the spring becomes 'L'. The mass is pulled down by a distance 'd' and released. If the equation of motion of the mass is $\frac{d^2x}{dt^2} + P^2x = 0$, then P is equal to

(g = acceleration due to gravity)

Ans

✗ 1. $\frac{L-\ell}{g}$

✗ 2. $\frac{g}{L-\ell}$

✓ 3. $\sqrt{\frac{g}{L-\ell}}$

✗ 4. $\sqrt{\frac{L-\ell}{g}}$

Question Type : **MCQ**
Question ID : **37135117028**
Option 1 ID : **37135168110**
Option 2 ID : **37135168109**
Option 3 ID : **37135168111**
Option 4 ID : **37135168112**
Status : **Answered**
Chosen Option : **3**

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Q.9 A force 'F' of same magnitude is applied tangentially on upper and lower face of a cube, in opposite directions. Side of the cube is 'L'. The upper face of the cube shifts parallel to itself by a distance 'x_1'. If another cube of same material but side '2L' is subjected to the above condition, then the displacement of the top layer is

Ans

1. $\frac{x_1}{6}$
2. $\frac{x_1}{2}$
3. $\frac{x_1}{8}$
4. $\frac{x_1}{4}$

5

Question Type : **MCQ**
Question ID : **37135117015**
Option 1 ID : **37135168058**
Option 2 ID : **37135168060**
Option 3 ID : **37135168057**
Option 4 ID : **37135168059**
Status : **Marked For Review**
Chosen Option : **4**

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Q.10 A concave mirror of focal length 'f_1' is placed at a distance 'd' from a convex lens of focal length 'f_2'. A parallel beam of light coming from infinity parallel to principal axis falls on the convex lens and then after refraction falls on the concave mirror. If it is to retrace the path, the distance 'd' should be

Ans

✗ 1. $f_1 + f_2$

✗ 2. $-f_1 + f_2$

✓ 3. $2f_1 + f_2$

✗ 4. $2f_1 - f_2$

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Question Type : **MCQ**
Question ID : **37135117047**
Option 1 ID : **37135168185**
Option 2 ID : **37135168186**
Option 3 ID : **37135168187**
Option 4 ID : **37135168188**
Status : **Answered**
Chosen Option : **4**

Q.11 The ground state energy of hydrogen atom is -13· 6 eV. The kinetic and potential energy of the electron in the second excited state is respectively

Ans

✗ 1. $+3 \cdot 02\ \text{eV}, -1 \cdot 51\ \text{eV}$

✓ 2. $1 \cdot 51\ \text{eV}, -3 \cdot 02\ \text{eV}$

✗ 3. $-1 \cdot 51\ \text{eV}, +3 \cdot 02\ \text{eV}$

✗ 4. $+3 \cdot 02\ \text{eV}, +1 \cdot 51\ \text{eV}$

Question Type : **MCQ**
Question ID : **37135117003**
Option 1 ID : **37135168012**
Option 2 ID : **37135168010**
Option 3 ID : **37135168009**
Option 4 ID : **37135168011**
Status : **Answered**
Chosen Option : **2**

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Q.12 The fundamental frequency of a sonometer wire is 50 Hz for some length and tension. If the length is increased by 25 % by keeping tension same, then frequency change of second harmonic is

Ans

1. decreased by 10%
2. decreased by 20%
3. decreased by 5%
4. decreased by 15%

8

Question Type : **MCQ**
Question ID : **37135117013**
Option 1 ID : **37135168051**
Option 2 ID : **37135168049**
Option 3 ID : **37135168052**
Option 4 ID : **37135168050**
Status : **Answered**
Chosen Option : **3**

Q.13 If the radius of the spherical Gaussian surface is increased then the electric flux due to a point charge enclosed by the surface

Ans

1. decreases.
2. remains unchanged.
3. increases.
4. is zero.

12

Question Type : **MCQ**
Question ID : **37135117014**
Option 1 ID : **37135168055**
Option 2 ID : **37135168053**
Option 3 ID : **37135168054**
Option 4 ID : **37135168056**
Status : **Marked For Review**
Chosen Option : **2**

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Q.14 A closed pipe containing liquid showed a pressure 'P_1' by guage. When the valve is opened, pressure was reduced to 'P_2'. The speed of water flowing out of the pipe is [ρ = density of water]

Ans

1. $\left[\frac{2\,(P_1+P_2)}{\rho}\right]^{1/2}$

2. $\left[\frac{2\,(P_1-P_2)}{\rho}\right]^{1/2}$

3. $\left[\frac{\rho}{2\,(P_1-P_2)}\right]^{1/2}$

4. $\left[\frac{\rho}{2\,(P_1+P_2)}\right]^{1/2}$

8

Question Type : **MCQ**
Question ID : **37135117042**
Option 1 ID : **37135168166**
Option 2 ID : **37135168165**
Option 3 ID : **37135168167**
Option 4 ID : **37135168168**
Status : **Answered**
Chosen Option : **2**

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Q.15 A charged particle is always moving parallel to the direction of magnetic field. The magnetic force acting on the particle will be

Ans

✗ 1. opposite to its velocity.

✓ 2. zero.

✗ 3. perpendicular to its velocity.

✗ 4. along its velocity.

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Question Type : **MCQ**
Question ID : **37135117002**
Option 1 ID : **37135168006**
Option 2 ID : **37135168008**
Option 3 ID : **37135168007**
Option 4 ID : **37135168005**
Status : **Answered**
Chosen Option : **2**

Q.16 Soap solution is used for cleaning dirty clothes because

Ans

✓ 1. surface tension of solution is decreased.

✗ 2. viscosity of solution is increased.

✗ 3. temperature of solution is decreased.

✗ 4. surface tension of solution in increased.

C

Question Type : **MCQ**
Question ID : **37135117009**
Option 1 ID : **37135168035**
Option 2 ID : **37135168036**
Option 3 ID : **37135168033**
Option 4 ID : **37135168034**
Status : **Answered**
Chosen Option : **1**

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Q.17 The refraction of light ray takes place from air to water, water to glass and again glass to air. The ray emerges parallel to incident ray. The correct relation is [n_a, n_w, n_g represent refractive indices of air, water and glass respectively.]

Ans

25

✗ 1. $_g n_w = \frac{_a n_g}{_a n_w}$

✗ 2. $_g n_w = {_a n_g} \times {_a n_w}$

✗ 3. $_w n_g = \frac{_a n_w}{_a n_g}$

✓ 4. $_w n_g = \frac{_a n_g}{_a n_w}$

Question Type : **MCQ**
Question ID : **37135117044**
Option 1 ID : **37135168175**
Option 2 ID : **37135168176**
Option 3 ID : **37135168174**
Option 4 ID : **37135168173**
Status : **Marked For Review**
Chosen Option : **1**

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Q.18 A constant torque of 200N turns a flywheel, which is at rest, about an axis through its centre and perpendicular to its plane. If its moment of inertia is 50 kg-m^2, then in 4 second, what will be change in its angular momentum?

Ans

✔ 1. 800 kg-m^2/s

✗ 2. 200 kg-m^2/s

✗ 3. 40 kg-m^2/s

✗ 4. 20 kg-m^2/s

3

Question Type : **MCQ**
Question ID : **37135117020**
Option 1 ID : **37135168080**
Option 2 ID : **37135168079**
Option 3 ID : **37135168078**
Option 4 ID : **37135168077**
Status : **Marked For Review**
Chosen Option : **1**

Q.19 If a unit vector is represented as $\vec{u} = 0{\cdot}4\,\hat{i} + 0{\cdot}7\,\hat{j} + c\,\hat{k}$, then the value of 'c' is

Ans

✗ 1. $\sqrt{0 \cdot 11}$

✗ 2. $\sqrt{0 \cdot 25}$

✗ 3. $\sqrt{0 \cdot 65}$

✔ 4. $\sqrt{0 \cdot 35}$

22

Question Type : **MCQ**
Question ID : **37135117022**
Option 1 ID : **37135168085**
Option 2 ID : **37135168086**
Option 3 ID : **37135168088**
Option 4 ID : **37135168087**
Status : **Answered**
Chosen Option : **4**

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Q.20 A body performing simple harmonic motion has potential energy 'P_1' at displacement 'x_1'. Its potential energy is 'P_2' at displacement 'x_2'. The potential energy 'P' at displacement $(x_1 + x_2)$ is

Ans

1. $P_1 + P_2$
2. $\sqrt{P_1 P_2}$
3. $\sqrt{P_1^2 + P_2^2}$
4. $P_1 + P_2 + 2\sqrt{P_1 P_2}$

Question Type : **MCQ**
Question ID : **37135117045**
Option 1 ID : **37135168177**
Option 2 ID : **37135168180**
Option 3 ID : **37135168178**
Option 4 ID : **37135168179**
Status : **Answered**
Chosen Option : **4**

Q.21 What should be the length of a closed pipe to produce resonance with sound wave of wavelength 62 cm, in fundamental mode ?
[Neglect end correction]

Ans

1. 31 cm
2. 15 · 5 cm
3. 20 · 6 cm
4. 46 · 5 cm

Question Type : **MCQ**
Question ID : **37135117048**
Option 1 ID : **37135168190**
Option 2 ID : **37135168192**
Option 3 ID : **37135168191**
Option 4 ID : **37135168189**
Status : **Marked For Review**
Chosen Option : **2**

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Q.22 A thick brass wire of length 'L' and density 'ρ' is suspended from rigid support. Due to its own weight, 'ℓ' is the increase in length. Young's modulus 'Y' of brass wire in terms of density is

(g = acceleration due to gravity)

Ans

1. $Y = \frac{\rho g L}{4\ell}$

2. $Y = \frac{\rho g L^2}{4\ell}$

3. $Y = \frac{\rho g L}{3\ell}$

4. $Y = \frac{\rho g L^2}{\ell}$

Question Type : **MCQ**
Question ID : **37135117038**
Option 1 ID : **37135168152**
Option 2 ID : **37135168149**
Option 3 ID : **37135168150**
Option 4 ID : **37135168151**
Status : **Marked For Review**
Chosen Option : **4**

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Q.23 The percentage errors in measurements of mass and speed of a body are 2% and 3% respectively. What is the percentage error in kinetic energy of the body?

Ans

✗ 1. 9%

✗ 2. 5%

✓ 3. 8%

✗ 4. 0%

Question Type : **MCQ**
Question ID : **37135117017**
Option 1 ID : **37135168068**
Option 2 ID : **37135168066**
Option 3 ID : **37135168067**
Option 4 ID : **37135168065**
Status : **Answered**
Chosen Option : **3**

Q.24 In the process of space communication, use of modem is necessary. In which one of the following modes modem acts as a modulator and a demodulator respectively?

Ans

✓ 1. Transmitting and receiving.

✗ 2. Both receiving.

✗ 3. Both transmitting.

✗ 4. Receiving and transmitting.

Question Type : **MCQ**
Question ID : **37135117026**
Option 1 ID : **37135168101**
Option 2 ID : **37135168104**
Option 3 ID : **37135168103**
Option 4 ID : **37135168102**
Status : **Marked For Review**
Chosen Option : **1**

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Q.25 A body is moving along the circumference of a circle of radius 'r' with uniform speed 'v', then the radial acceleration of the body is

Ans

1. $\frac{v}{r}$

2. $\frac{v^2}{r} < 0$

3. $\frac{v^2}{r} > 0$

4. zero

Question Type : **MCQ**
Question ID : **37135117034**
Option 1 ID : **37135168133**
Option 2 ID : **37135168135**
Option 3 ID : **37135168134**
Option 4 ID : **37135168136**
Status : **Marked For Review**
Chosen Option : **3**

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Q.26 Two concentric circular coils of 'n' turns each are situated in the same plane. Their radii are 'a_1' and 'a_2' ($a_2 > a_1$) and they carry currents 'I_1' and 'I_2' respectively ($I_1 > I_2$) in opposite direction. The magnetic field at the centre is

Ans

✔ 1. $\frac{\mu_0 n}{2}\left[\frac{I_1 a_2 - I_2 a_1}{a_1 a_2}\right]$

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✘ 2. $\frac{\mu_0 n}{2a_1 a_2}[I_1 - I_2]$

✘ 3. $\frac{\mu_0 n}{2I_1 I_2}[a_2 - a_1]$

✘ 4. $\frac{\mu_0 n}{2}\left[\frac{I_1 a_1 - I_2 a_2}{a_1 a_2}\right]$

Question Type : **MCQ**
Question ID : **37135117039**
Option 1 ID : **37135168154**
Option 2 ID : **37135168155**
Option 3 ID : **37135168156**
Option 4 ID : **37135168153**
Status : **Answered**
Chosen Option : **1**

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Q.27 The function of a dielectric in a capacitor is

Ans

1. to increase the effective potential on plates.

2. to reduce the effective potential on plates.

3. to decrease the capacitance.

4. to reduce the plate area of capacitor.

12

Question Type : **MCQ**
Question ID : **37135117041**
Option 1 ID : **37135168162**
Option 2 ID : **37135168161**
Option 3 ID : **37135168163**
Option 4 ID : **37135168164**
Status : **Answered**
Chosen Option : **2**

Q.28 The equation of simple harmonic wave is given as $y = 5 \sin \frac{\pi}{2}(100\,t - x)$, where 'x' and 'y' are in metre and time in second. The period of the wave is

Ans

1. $0 \cdot 02$ s

2. 5 s

3. 25 s

4. $0 \cdot 04$ s

4

Question Type : **MCQ**
Question ID : **37135117004**
Option 1 ID : **37135168015**
Option 2 ID : **37135168014**
Option 3 ID : **37135168013**
Option 4 ID : **37135168016**
Status : **Answered**
Chosen Option : **4**

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Q.29 Two progressive waves are travelling towards each other with velocity 50 m/s and frequency 200 Hz. The distance between two consecutive antinodes is

Ans

1. $0 \cdot 031$ m
2. $0 \cdot 125$ m
3. $0 \cdot 250$ m
4. $0 \cdot 0625$ m

Question Type : **MCQ**
Question ID : **37135117023**
Option 1 ID : **37135168089**
Option 2 ID : **37135168091**
Option 3 ID : **37135168092**
Option 4 ID : **37135168090**
Status : **Answered**
Chosen Option : **2**

Q.30 The magnetic moment produced in a substance of mass 5 gram is 6×10^{-7} Am^2. If its density is 5 g/cm^3, then intensity of magnetization in $\frac{A}{m}$ will be

Ans

1. 6
2. 60
3. $\frac{1}{6}$
4. $0 \cdot 6$

Question Type : **MCQ**
Question ID : **37135117024**
Option 1 ID : **37135168094**
Option 2 ID : **37135168096**
Option 3 ID : **37135168095**
Option 4 ID : **37135168093**
Status : **Answered**
Chosen Option : **4**

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Q.31 A coin is placed on the horizontal plate. Plate performs S.H.M. vertically with angular frequency 'ω'. The amplitude (A) of oscillations is gradually increased. The coin will lose contact with plate for the first time when amplitude is (g = acceleration due to gravity)

Ans

✔ 1. $\frac{g}{\omega^2}$

✗ 2. zero

✗ 3. $\frac{\omega^2}{g}$

✗ 4. $\frac{A}{2}$

Question Type : **MCQ**
Question ID : **37135117006**
Option 1 ID : **37135168021**
Option 2 ID : **37135168024**
Option 3 ID : **37135168022**
Option 4 ID : **37135168023**
Status : **Marked For Review**
Chosen Option : **4**

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Q.32 Moving coil galvanometers M_1 and M_2 have resistance, number of turns, area of coil and magnetic field as follows.

$R_1 = 10\Omega$, $R_2 = 14\Omega$, $N_1 = 30$, $N_2 = 42$,

$A_1 = 3{\cdot}6 \times 10^{-3}\ m^2$, $A_2 = 1{\cdot}8 \times 10^{-2}\ m^2$, $B_1 = 0{\cdot}25\ T$, $B_2 = 0{\cdot}50\ T$

(Spring constants are same for both materials)

The ratio of (i) current sensitivity and (ii) voltage sensitivity for galvanometer (M_2 to M_1) is respectively

Ans

1. 1:1, 1·4:1
2. 1:1·4, 1:1
3. 4:1, 1:1
4. 1·4: 1, 1:1

14

Question Type : **MCQ**
Question ID : **37135117021**
Option 1 ID : **37135168082**
Option 2 ID : **37135168083**
Option 3 ID : **37135168084**
Option 4 ID : **37135168081**
Status : **Marked For Review**
Chosen Option : **2**

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Q.33 A water film is formed between the two straight parallel wires, each of length 10 cm, kept at a separation of 0 · 5 cm. Now, the separation between them is increased by 1 mm without breaking the water film.

The work done for this is

(surface tension of water = $7 \cdot 2 \times 10^{-2}$ Nm^{-1})

Ans

1. $7 \cdot 22 \times 10^{-6}$ J

2. $5 \cdot 76 \times 10^{-5}$ J

3. $1 \cdot 44 \times 10^{-5}$ J

4. $2 \cdot 88 \times 10^{-5}$ J

6

Question Type : **MCQ**
Question ID : **37135117030**
Option 1 ID : **37135168117**
Option 2 ID : **37135168120**
Option 3 ID : **37135168118**
Option 4 ID : **37135168119**
Status : **Answered**
Chosen Option : **3**

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Q.34 An electron in the ground state of hydrogen atom is revolving in a circular orbit of radius R. The orbital magnetic moment of the electron is

(m = mass of electron, h = Planck's constant, e = electronic charge)

Ans

✗ 1. $\frac{-eh}{\pi m}$

✗ 2. $\frac{eh}{2\pi m}$

✗ 3. $\frac{2eh}{\pi m}$

✓ 4. $\frac{eh}{4\pi m}$

18

Question Type : **MCQ**
Question ID : **37135117031**
Option 1 ID : **37135168122**
Option 2 ID : **37135168123**
Option 3 ID : **37135168121**
Option 4 ID : **37135168124**
Status : **Marked For Review**
Chosen Option : **2**

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Q.35 A potentiometer wire of length 100 cm and resistance 3 Ω is connected in series with resistance of 8 Ω and an accumulator of 4 volt whose internal resistance is 1 Ω.

A cell of e.m.f. 'E' is balanced by 50 cm length of the wire. The e.m.f. of the cell is

Ans

1. 1 · 00 volt.
2. 0 · 75 volt.
3. 0 · 50 volt.
4. 0 · 25 volt.

13

Question Type : **MCQ**
Question ID : **37135117033**
Option 1 ID : **37135168132**
Option 2 ID : **37135168131**
Option 3 ID : **37135168130**
Option 4 ID : **37135168129**
Status : **Marked For Review**
Chosen Option : **2**

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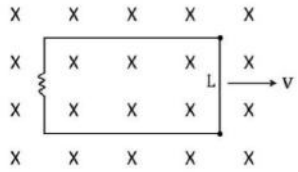
Q.36 A long metal rod of length 'L' completes the circuit as shown. The area of the circuit is perpendicular to magnetic field 'B'. Total resistance of the circuit is 'R'. The force needed to move the rod in the direction as shown with constant speed 'V' is



Ans

✗ 1. $\frac{B^2LV}{R}$

✗ 2. $\frac{BLV}{R}$

✗ 3. $\frac{BLV^2}{R}$

✓ 4. $\frac{B^2L^2V}{R}$

16

Question Type : **MCQ**
Question ID : **37135117036**
Option 1 ID : **37135168143**
Option 2 ID : **37135168142**
Option 3 ID : **37135168144**
Option 4 ID : **37135168141**
Status : **Marked For Review**
Chosen Option : **4**

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Q.37 A bar magnet is held perpendicular to a uniform magnetic field. The couple acting on the magnet is to be halved by rotating it. Through what angle it should be rotated? $\left[\sin\left(\frac{\pi}{2}\right) = 1\right]$

Ans

1. $\sin^{-1}(0 \cdot 8660)$
2. $\sin^{-1}(0 \cdot 7071)$
3. $\sin^{-1}(1)$
4. $\sin^{-1}(0 \cdot 5)$

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Question Type : **MCQ**
Question ID : **37135117012**
Option 1 ID : **37135168047**
Option 2 ID : **37135168046**
Option 3 ID : **37135168048**
Option 4 ID : **37135168045**
Status : **Marked For Review**
Chosen Option : **4**

Q.38 In single slit diffraction experiment, when the distance of separation between the slit and screen is doubled, the angular separation between fringes

Ans

1. increases.
2. decreases.
3. remains same.
4. first increases and then decreases.

11

Question Type : **MCQ**
Question ID : **37135117005**
Option 1 ID : **37135168017**
Option 2 ID : **37135168018**
Option 3 ID : **37135168020**
Option 4 ID : **37135168019**
Status : **Answered**
Chosen Option : **3**

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Q.39 A sphere of gold when brought towards a powerful magnet experiences

Ans

✗ 1. attractive force.

✓ 2. repulsive force.

✗ 3. zero force.

✗ 4. nuclear force.

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Question Type : **MCQ**
Question ID : **37135117050**
Option 1 ID : **37135168199**
Option 2 ID : **37135168198**
Option 3 ID : **37135168197**
Option 4 ID : **37135168200**
Status : **Answered**
Chosen Option : **1**

Q.40 A lift of mass 'm' is ascending with an acceleration 'a' ($a < g$). The tension in the cable of the lift is

(g= acceleration due to gravity)

Ans

✗ 1. $m\,(g - a)$

✓ 2. $m\,(g + a)$

✗ 3. $m\,(2g + a)$

✗ 4. $m\,(a - g)$

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Question Type : **MCQ**
Question ID : **37135117032**
Option 1 ID : **37135168125**
Option 2 ID : **37135168128**
Option 3 ID : **37135168127**
Option 4 ID : **37135168126**
Status : **Answered**
Chosen Option : **2**

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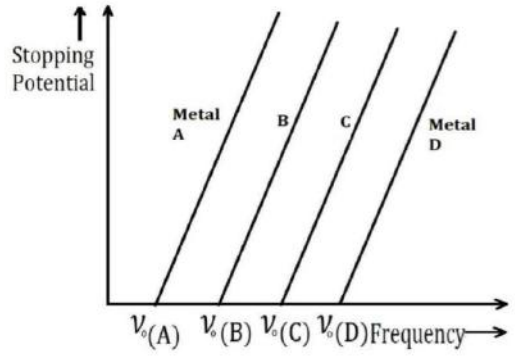
Q.41 The variation of stopping potential for metals A, B, C and D with frequency of incident radiation is as shown in the figure. For which metal, stopping potential is higher for lower values of threshold frequency (ν_o)?

[The frequency of incident radiation, 'ν' is same.]

17



Ans

1. ✗ C
2. ✗ D
3. ✓ A
4. ✗ B

Question Type : **MCQ**
Question ID : **37135117016**
Option 1 ID : **37135168063**
Option 2 ID : **37135168064**
Option 3 ID : **37135168061**
Option 4 ID : **37135168062**
Status : **Marked For Review**
Chosen Option : **3**

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Q.42 The threshold wavelengths for photoelectric emission from two metals A and B are 400 nm and 800 nm respectively. The ratio of their work functions, ϕ_A to ϕ_B is

Ans

17

1. ✗ $\frac{1}{2}$
2. ✗ 4
3. ✗ $\frac{1}{4}$
4. ✓ 2

Question Type : **MCQ**
Question ID : **37135117043**
Option 1 ID : **37135168170**
Option 2 ID : **37135168172**
Option 3 ID : **37135168169**
Option 4 ID : **37135168171**
Status : **Answered**
Chosen Option : **4**

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Q.43 If p–n junction diode is reserve biased then

Ans

✗ 1. potential barrier decreases.

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✗ 2. width of the depletion layer decreases.

✗ 3. electrical conduction is possible.

✔ 4. width of the depletion layer increases.

Question Type :	**MCQ**
Question ID :	**37135117019**
Option 1 ID :	**37135168075**
Option 2 ID :	**37135168074**
Option 3 ID :	**37135168076**
Option 4 ID :	**37135168073**
Status :	**Answered**
Chosen Option :	**4**

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Q.44 A prism having refractive index $\sqrt{2}$ and refracting angle 30° has one of the refracting surfaces silvered. The beam of light incident on the other refracting surface will retrace its path, if angle of incidence is $[\sin\frac{\pi}{6} = 0 \cdot 5]$

Ans

1. $sin^{-1}\left(\frac{3}{4}\right)$

2. $sin^{-1}\left(\frac{1}{2}\right)$

3. $sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$

4. $sin^{-1}\left(\frac{1}{\sqrt{2}}\right)$

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Question Type : **MCQ**
Question ID : **37135117007**
Option 1 ID : **37135168028**
Option 2 ID : **37135168025**
Option 3 ID : **37135168027**
Option 4 ID : **37135168026**
Status : **Answered**
Chosen Option : **4**

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Q.45 The resultant of two vectors $\vec{P}$ and $\vec{Q}$ is $\vec{R}$. When the direction of $\vec{Q}$ is reversed, the resultant is given by $\vec{S}$. Which one of the following is true for vectors $\vec{R}$ and $\vec{S}$?

Ans

✗ 1. $R^2 - S^2 = (P^2 + Q^2)$

✗ 2. $R^2 - S^2 = 2(\vec{P} \cdot \vec{Q})$

✗ 3. $R^2 + S^2 = 4(\vec{P} \cdot \vec{Q})$

✓ 4. $R^2 + S^2 = 2(P^2 + Q^2)$

22

Question Type : **MCQ**
Question ID : **37135117027**
Option 1 ID : **37135168107**
Option 2 ID : **37135168105**
Option 3 ID : **37135168106**
Option 4 ID : **37135168108**
Status : **Marked For Review**
Chosen Option : **4**

Q.46 In meter-bridge experiment a resistance of 18 Ω is connected in left gap and an unknown resistance R is connected in right gap. The null point is obtained at 'ℓ_1' from left end. If unknown resistance is replaced by $\left(\frac{R}{3}\right)$ Ω, the null point is obtained at $1 \cdot 5\ \ell_1$. The unknown resistance is

Ans

✗ 1. 9 Ω

✗ 2. 36 Ω

✓ 3. 18 Ω

✗ 4. 27 Ω

13

Question Type : **MCQ**
Question ID : **37135117010**
Option 1 ID : **37135168037**
Option 2 ID : **37135168040**
Option 3 ID : **37135168038**
Option 4 ID : **37135168039**
Status : **Marked For Review**
Chosen Option : **1**

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Q.47 Two satellites 'A' and 'B' of same mass are revolving round the earth at height '2R' and '3R' respectively above the surface of the earth. The ratio of kinetic energies of A to B will be

Ans

✗ 1. 3:2

✗ 2. 3:4

✗ 3. 2:3

✓ 4. 4:3

2

Question Type : **MCQ**
Question ID : **37135117011**
Option 1 ID : **37135168043**
Option 2 ID : **37135168042**
Option 3 ID : **37135168044**
Option 4 ID : **37135168041**
Status : **Marked For Review**
Chosen Option : **4**

Q.48 For athermanous substances, coefficient of transmission is

Ans

✗ 1. less than one but greater than zero.

✓ 2. zero.

✗ 3. equal to one.

✗ 4. greater than one.

9

Question Type : **MCQ**
Question ID : **37135117018**
Option 1 ID : **37135168071**
Option 2 ID : **37135168069**
Option 3 ID : **37135168070**
Option 4 ID : **37135168072**
Status : **Marked For Review**
Chosen Option : **3**

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Q.49 A motorcyclist rides in a horizontal circle about central vertical axis inside a cylindrical chamber of radius 'r'. If the coefficient of friction between the tyres and the inner surface of chamber is 'μ', the minimum speed of motorcyclist to prevent him from skidding is ('g' = acceleration due to gravity)

Ans

✗ 1. $\sqrt{\frac{\mu g}{r}}$

✗ 2. $\sqrt{\frac{r\mu}{g}}$

✗ 3. $\sqrt{\frac{g}{r\mu}}$

✓ 4. $\sqrt{\frac{rg}{\mu}}$

Question Type : **MCQ**
Question ID : **37135117001**
Option 1 ID : **37135168003**
Option 2 ID : **37135168004**
Option 3 ID : **37135168001**
Option 4 ID : **37135168002**
Status : **Answered**
Chosen Option : **4**

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Q.50

For a gas $\frac{R}{C_v} = 0 \cdot 67$. This gas is made up of molecules which are

Ans

1. diatomic.

2. polyatomic.

3. monoatomic.

4. mixture of diatomic and polyatomic.

Question Type : **MCQ**
Question ID : **37135117035**
Option 1 ID : **37135168137**
Option 2 ID : **37135168138**
Option 3 ID : **37135168140**
Option 4 ID : **37135168139**
Status : **Answered**
Chosen Option : **3**

Section : **Chemistry**

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Q.1

Identify 'A' in the following reaction.

$$A + SOCl_2 \xrightarrow[\text{reflux}]{\text{pyridine}} B \xrightarrow[\Delta]{KCN(alco)} \text{propane nitrile}$$

Ans

✔ 1. Ethanol

✘ 2. Propane

✘ 3. 1-Chloropropane

✘ 4. Propan-1-ol

Question Type : **MCQ**
Question ID : **37135117080**
Option 1 ID : **37135168320**
Option 2 ID : **37135168318**
Option 3 ID : **37135168319**
Option 4 ID : **37135168317**
Status : **Answered**
Chosen Option : **4**

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Q.2

IUPAC name of isobutyl chloride is

Ans

✗ 1. 2-chloropropane

✗ 2. 2-chlorobutane

✗ 3. 2-chloro-2-methylpropane

✓ 4. 1-chloro-2-methylpropane

Question Type : **MCQ**
Question ID : **37135117086**
Option 1 ID : **37135168341**
Option 2 ID : **37135168343**
Option 3 ID : **37135168342**
Option 4 ID : **37135168344**
Status : **Answered**
Chosen Option : **2**

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Q.3

Which among the following is a mineral of magnesium?

Ans

1. Limonite

2. Cryolite

3. Magnesite

4. Magnetite

Question Type : **MCQ**
Question ID : **37135117070**
Option 1 ID : **37135168280**
Option 2 ID : **37135168277**
Option 3 ID : **37135168278**
Option 4 ID : **37135168279**
Status : **Answered**
Chosen Option : **3**

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Q.4 What is the difference in molar mass of any two neighbouring alkanes?

Ans

✗ 1. $12\ g\ mol^{-1}$

✗ 2. $10\ g\ mol^{-1}$

✗ 3. $15\ g\ mol^{-1}$

✓ 4. $14\ g\ mol^{-1}$

Question Type : **MCQ**
Question ID : **37135117077**
Option 1 ID : **37135168307**
Option 2 ID : **37135168305**
Option 3 ID : **37135168306**
Option 4 ID : **37135168308**
Status : **Answered**
Chosen Option : **4**

Q.5 Which among the following elements has lowest value of electronegativity?

Ans

✓ 1. Bi

✗ 2. As

✗ 3. Sb

✗ 4. N

Question Type : **MCQ**
Question ID : **37135117062**
Option 1 ID : **37135168247**
Option 2 ID : **37135168245**
Option 3 ID : **37135168246**
Option 4 ID : **37135168248**
Status : **Answered**
Chosen Option : **1**

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Q.6

Identify the monomers used in preparation of Novolac.

Ans

1. Phenol and Ethanol

2. Urea and Phenol

3. Phenol and Methanal

4. Urea and Methanal

Question Type : **MCQ**
Question ID : **37135117099**
Option 1 ID : **37135168393**
Option 2 ID : **37135168396**
Option 3 ID : **37135168394**
Option 4 ID : **37135168395**
Status : **Answered**
Chosen Option : **3**

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Q.7

What is the oxidation state of chlorine atom in hypochlorous acid?

Ans

1. $+2$

2. $+3$

3. -1

4. $+1$

Question Type : **MCQ**
Question ID : **37135117078**
Option 1 ID : **37135168311**
Option 2 ID : **37135168312**
Option 3 ID : **37135168309**
Option 4 ID : **37135168310**
Status : **Marked For Review**
Chosen Option : **4**

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Q.8 Which catalyst is used in conversion of chlorobenzene to phenol by Rasching process?

Ans

✔ 1. Calcium phosphate

✘ 2. Calcium carbonate

✘ 3. Calcium sulphate

✘ 4. Calcium chloride

Question Type : **MCQ**
Question ID : **37135117069**
Option 1 ID : **37135168274**
Option 2 ID : **37135168276**
Option 3 ID : **37135168275**
Option 4 ID : **37135168273**
Status : **Marked For Review**
Chosen Option : **1**

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Q.9

Which class of terpenes includes β-carotene?

Ans

✔ 1. Tetraterpenes

✘ 2. Triterpenes

✘ 3. Monoterpenes

✘ 4. Sesquiterpenes

Question Type : **MCQ**
Question ID : **37135117059**
Option 1 ID : **37135168236**
Option 2 ID : **37135168235**
Option 3 ID : **37135168233**
Option 4 ID : **37135168234**
Status : **Marked For Review**
Chosen Option : **2**

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Q.10

What is the oxidation state of sulphur in oil of vitriol?

Ans

1. $+2$

2. $+6$

3. -3

4. $+3$

Question Type : **MCQ**
Question ID : **37135117097**
Option 1 ID : **37135168388**
Option 2 ID : **37135168386**
Option 3 ID : **37135168385**
Option 4 ID : **37135168387**
Status : **Answered**
Chosen Option : **2**

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Q.11

What is the highest oxidation state exhibited by actinoids?

Ans

1. +7

2. +3

3. +6

4. +4

Question Type : **MCQ**
Question ID : **37135117051**
Option 1 ID : **37135168201**
Option 2 ID : **37135168204**
Option 3 ID : **37135168202**
Option 4 ID : **37135168203**
Status : **Marked For Review**
Chosen Option : **1**

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Q.12 Which among the following is NOT obtained when bromobenzene treated with bromoethane and sodium in presence of dry ether ?

Ans

✗ 1. n-butane

✗ 2. Diphenyl

✓ 3. Toluene

✗ 4. Ethylbenzene

Question Type : **MCQ**
Question ID : **37135117058**
Option 1 ID : **37135168230**
Option 2 ID : **37135168229**
Option 3 ID : **37135168231**
Option 4 ID : **37135168232**
Status : **Answered**
Chosen Option : **3**

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Q.13 What is the oxidation state and coordination number of platinum respectively in $[Pt(NH_3)_6]^{4+}$?

Ans

✗ 1. +6 and 4

✗ 2. +4 and 4

✗ 3. +6 and 6

✓ 4. +4 and 6

Question Type : **MCQ**
Question ID : **37135117093**
Option 1 ID : **37135168371**
Option 2 ID : **37135168372**
Option 3 ID : **37135168370**
Option 4 ID : **37135168369**
Status : **Answered**
Chosen Option : **4**

Q.14 At what temperature the volume of a gas becomes absolutely zero ?

Ans

✗ 1. 273·15°C

✗ 2. −273·15 K

✗ 3. 273·15 K

✓ 4. −273·15°C

Question Type : **MCQ**
Question ID : **37135117081**
Option 1 ID : **37135168322**
Option 2 ID : **37135168323**
Option 3 ID : **37135168321**
Option 4 ID : **37135168324**
Status : **Answered**
Chosen Option : **4**

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Q.15 What is the coordination number of cation in ionic compound if the type of hole occupied by cation is octahedral ?

Ans

1. 8

2. 6

3. 4

4. 3

Question Type : **MCQ**
Question ID : **37135117055**
Option 1 ID : **37135168220**
Option 2 ID : **37135168219**
Option 3 ID : **37135168218**
Option 4 ID : **37135168217**
Status : **Answered**
Chosen Option : **3**

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Q.16 A sample of calcium carbonate has the following percentage composition.
Ca = 40 %, C = 12 % and O = 48 %
According to law of definite proportion the weight of calcium in 4 g of a sample of calcium carbonate from another source will be (at. no. Ca = 40, C = 40, C = 12, O = 16)

Ans

✗ 1. $1{\cdot}6 \times 10^{-2}$ g

✓ 2. 1·6 g

✗ 3. 0·1 g

✗ 4. 0·2 g

Question Type : **MCQ**
Question ID : **37135117085**
Option 1 ID : **37135168338**
Option 2 ID : **37135168339**
Option 3 ID : **37135168337**
Option 4 ID : **37135168340**
Status : **Marked For Review**
Chosen Option : **2**

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Q.17

The number of σ bonds in carbolic acid are

Ans

1. 13

2. 8

3. 12

4. 6

Question Type : **MCQ**
Question ID : **37135117073**
Option 1 ID : **37135168292**
Option 2 ID : **37135168290**
Option 3 ID : **37135168291**
Option 4 ID : **37135168289**
Status : **Answered**
Chosen Option : **2**

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Q.18 Which of the following reactions involves α-halogenation of carboxylic acid?

Ans

✗ 1. Gattermann reaction

✗ 2. Riemer - Tiemann reaction

✗ 3. Sandmeyer reaction

✓ 4. Hell-Vohlard-Zelinsky reaction

Question Type : **MCQ**
Question ID : **37135117095**
Option 1 ID : **37135168377**
Option 2 ID : **37135168378**
Option 3 ID : **37135168379**
Option 4 ID : **37135168380**
Status : **Answered**
Chosen Option : **4**

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Q.19 Which among the following polymers belongs to class thermoplastic polymers ?

Ans

✗ 1. Bakelite

✓ 2. Polythene

✗ 3. Terylene

✗ 4. Neoprene

Question Type : **MCQ**
Question ID : **37135117064**
Option 1 ID : **37135168256**
Option 2 ID : **37135168253**
Option 3 ID : **37135168254**
Option 4 ID : **37135168255**
Status : **Answered**
Chosen Option : **2**

Q.20 Relative lowering in vapour pressure of a solution containing non volatile solute is the ratio of

Ans

✗ 1.

Number of moles of solute to number of moles of solvent.

✗ 2.

Number of moles of solvent to total number of moles of solution.

✗ 3.

Number of moles of solvent to number of moles of solute.

✓ 4.

Number of moles of solute to total number of moles of solution.

Question Type : **MCQ**
Question ID : **37135117075**
Option 1 ID : **37135168297**
Option 2 ID : **37135168300**
Option 3 ID : **37135168299**
Option 4 ID : **37135168298**
Status : **Answered**
Chosen Option : **4**

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Q.21

Which of the following is an ionic compound?

Ans

✗ 1. SO_2

✗ 2. ICl

✗ 3. $CHCl_3$

✓ 4. KI

Question Type : **MCQ**
Question ID : **37135117096**
Option 1 ID : **37135168381**
Option 2 ID : **37135168382**
Option 3 ID : **37135168384**
Option 4 ID : **37135168383**
Status : **Answered**
Chosen Option : **4**

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Q.22

Which of the following is used as disinfectant as well as antiseptic?

Ans

1. Veronal

2. Seldane

3. Prontocil

4. Phenol

Question Type : **MCQ**
Question ID : **37135117076**
Option 1 ID : **37135168304**
Option 2 ID : **37135168301**
Option 3 ID : **37135168303**
Option 4 ID : **37135168302**
Status : **Answered**
Chosen Option : **4**

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Q.23

Find the empirical formula of organic compound if it contains 18·6 % C, 1·55 % H, 55·04 % chlorine ? (atomic mass C=12,H=1,Cl=35·5,O=16)

Ans

✗ 1. $C_2H_2Cl_2O_2$

✗ 2. CH_2ClO

✓ 3. $CHClO$

✗ 4. $CHClO_2$

Question Type : **MCQ**
Question ID : **37135117061**
Option 1 ID : **37135168241**
Option 2 ID : **37135168244**
Option 3 ID : **37135168243**
Option 4 ID : **37135168242**
Status : **Marked For Review**
Chosen Option : **3**

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Q.24 Which coordinate compound from following has a net negative charge on complex ion?

Ans

✗ 1.

Tris(ethylene diammine)cobalt(III)chloride

✓ 2.

Potassium trioxalato aluminate(III)

✗ 3. Tetracarbonyl Nickel(0)

✗ 4. Diammine silver(I)chloride

Question Type : **MCQ**
Question ID : **37135117057**
Option 1 ID : **37135168228**
Option 2 ID : **37135168226**
Option 3 ID : **37135168227**
Option 4 ID : **37135168225**
Status : **Marked For Review**
Chosen Option : **3**

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Q.25

How many primary amines are possible for the formula $C_4H_{11}N$?

Ans

1. 2

2. 4

3. 3

4. 1

Question Type : **MCQ**
Question ID : **37135117082**
Option 1 ID : **37135168326**
Option 2 ID : **37135168328**
Option 3 ID : **37135168327**
Option 4 ID : **37135168325**
Status : **Answered**
Chosen Option : **3**

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Q.26

Benzene diazonium chloride on reaction with ethanol forms

Ans

1. aniline

2. benzene

3. nitrobenzene

4. phenol

Question Type : **MCQ**
Question ID : **37135117071**
Option 1 ID : **37135168284**
Option 2 ID : **37135168282**
Option 3 ID : **37135168283**
Option 4 ID : **37135168281**
Status : **Marked For Review**
Chosen Option : **1**

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Q.27

Which of the following is a tricarboxylic acid ?

Ans

✗ 1. Valeric acid

✗ 2. Oxalic acid

✗ 3. Caproic acid

✓ 4. Citric acid

Question Type : **MCQ**
Question ID : **37135117065**
Option 1 ID : **37135168260**
Option 2 ID : **37135168257**
Option 3 ID : **37135168259**
Option 4 ID : **37135168258**
Status : **Answered**
Chosen Option : **4**

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Q.28 Which among the following alkali metal elements is used as coolant in fast breeder nuclear reactors.

Ans

✔ 1. Sodium

✘ 2. Potassium

✘ 3. Caesium

✘ 4. Lithium

Question Type : **MCQ**
Question ID : **37135117072**
Option 1 ID : **37135168286**
Option 2 ID : **37135168287**
Option 3 ID : **37135168288**
Option 4 ID : **37135168285**
Status : **Marked For Review**
Chosen Option : **4**

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Q.29

Which of the following is the formula of BHA?

Ans

✗ 1. $C_{15}H_{24}O$

✗ 2. $C_7H_5SNO_3$

✓ 3. $C_{11}H_{16}O_2$

✗ 4. $C_{14}H_{18}N_2O_5$

Question Type : **MCQ**
Question ID : **37135117054**
Option 1 ID : **37135168213**
Option 2 ID : **37135168215**
Option 3 ID : **37135168214**
Option 4 ID : **37135168216**
Status : **Answered**
Chosen Option : **2**

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Q.30 If 2 kJ of heat is released from system and 6 kJ of work is done on the system, what is enthalpy change of system ?

Ans

✗ 1. $+8\ \text{kJ}$

✗ 2. $+6\ \text{kJ}$

✗ 3. $-8\ \text{kJ}$

✓ 4. $-2\ \text{kJ}$

Question Type : **MCQ**
Question ID : **37135117060**
Option 1 ID : **37135168238**
Option 2 ID : **37135168237**
Option 3 ID : **37135168240**
Option 4 ID : **37135168239**
Status : **Answered**
Chosen Option : **4**

Q.31 What is the highest oxidation state exhibited by any transition element among all ?

Ans

✗ 1. $+7$

✗ 2. $+5$

✓ 3. $+8$

✗ 4. $+6$

Question Type : **MCQ**
Question ID : **37135117068**
Option 1 ID : **37135168270**
Option 2 ID : **37135168272**
Option 3 ID : **37135168269**
Option 4 ID : **37135168271**
Status : **Answered**
Chosen Option : **1**

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Q.32 From the given reaction,

$N_{2(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)}$ $\Delta H = -92{\cdot}6$ kJ, the enthalpy of formation of NH_3 is

Ans

✗ 1. $-92{\cdot}6$ kJ

✗ 2. $-138{\cdot}9$ kJ

✗ 3. $-185{\cdot}2$ kJ

✓ 4. $-46{\cdot}3$ kJ

Question Type : **MCQ**
Question ID : **37135117067**
Option 1 ID : **37135168265**
Option 2 ID : **37135168267**
Option 3 ID : **37135168268**
Option 4 ID : **37135168266**
Status : **Answered**
Chosen Option : **4**

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Q.33

Henry's law is a relation between

Ans

✔ 1. pressure and solubility

✘ 2. temperature and pressure

✘ 3. volume and solubility

✘ 4. pressure and volume

Question Type : **MCQ**
Question ID : **37135117098**
Option 1 ID : **37135168390**
Option 2 ID : **37135168389**
Option 3 ID : **37135168392**
Option 4 ID : **37135168391**
Status : **Answered**
Chosen Option : **1**

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Q.34

What is the bond order in N_2 Molecule ?

Ans

1. 2

2. zero

3. 1

4. 3

Question Type : **MCQ**
Question ID : **37135117091**
Option 1 ID : **37135168362**
Option 2 ID : **37135168364**
Option 3 ID : **37135168361**
Option 4 ID : **37135168363**
Status : **Answered**
Chosen Option : **4**

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Q.35 Which of the following is reacted with benzaldehyde to obtain l-phenylethanol?

Ans

1. C_6H_5MgBr

2. $C_6H_5CH_2MgBr$

3. CH_3MgBr

4. CH_3CH_2MgBr

Question Type : **MCQ**
Question ID : **37135117100**
Option 1 ID : **37135168397**
Option 2 ID : **37135168398**
Option 3 ID : **37135168399**
Option 4 ID : **37135168400**
Status : **Answered**
Chosen Option : **3**

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Q.36

Which of the following alcohols is least soluble in water?

Ans

1. Pentan-1-ol

2. 2-methyl butan-2-ol

3. Pentan-2-ol

4. 2,2-Dimethyl propan-1-ol

Question Type : **MCQ**
Question ID : **37135117089**
Option 1 ID : **37135168356**
Option 2 ID : **37135168354**
Option 3 ID : **37135168355**
Option 4 ID : **37135168353**
Status : **Marked For Review**
Chosen Option : **1**

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Q.37 Which among the following elements is obtained in pure form by liquation process of refining?

Ans

1. Copper

2. Tin

3. Gallium

4. Silicon

Question Type : **MCQ**
Question ID : **37135117079**
Option 1 ID : **37135168314**
Option 2 ID : **37135168313**
Option 3 ID : **37135168316**
Option 4 ID : **37135168315**
Status : **Answered**
Chosen Option : **2**

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Q.38 The distance between electrodes of a conductivity cell is 0·98 cm and area of cross section is 1·96 cm^2. What is the cell constant ?

Ans

1. $1\ cm^{-1}$

2. $1.5\ cm^{-1}$

3. $2\ cm^{-1}$

4. $0{\cdot}5\ cm^{-1}$

Question Type : **MCQ**
Question ID : **37135117090**
Option 1 ID : **37135168359**
Option 2 ID : **37135168358**
Option 3 ID : **37135168357**
Option 4 ID : **37135168360**
Status : **Marked For Review**
Chosen Option : **4**

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Q.39

Which among the following is an example of amorphous solid?

Ans

1. Camphor

2. Magnesium

3. Diamond

4. Glass

Question Type : **MCQ**
Question ID : **37135117087**
Option 1 ID : **37135168348**
Option 2 ID : **37135168346**
Option 3 ID : **37135168345**
Option 4 ID : **37135168347**
Status : **Answered**
Chosen Option : **1**

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Q.40

Which of the following alloy contain Al, Cu, Mg and Mn?

Ans

1. Babbitt metal

2. Stainless steel

3. Spiegeleisen

4. Duralumin

Question Type : **MCQ**
Question ID : **37135117083**
Option 1 ID : **37135168330**
Option 2 ID : **37135168331**
Option 3 ID : **37135168332**
Option 4 ID : **37135168329**
Status : **Answered**
Chosen Option : **4**

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Q.41 If a dilute solution of $AgNO_3$ is added to dilute solution of excess NaI, then the species adsorbed on AgI colloidal particles is

Ans

✗ 1. NO_3^-

✗ 2. Na^+

✓ 3. I^-

✗ 4. Ag^+

Question Type : **MCQ**
Question ID : **37135117066**
Option 1 ID : **37135168264**
Option 2 ID : **37135168262**
Option 3 ID : **37135168263**
Option 4 ID : **37135168261**
Status : **Answered**
Chosen Option : **1**

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Q.42 Which of the following groups increases the basic strength of substituted aniline?

Ans

1. $-SO_3$

2. $-OCH_3$

3. $-NO_2$

4. $-CN$

Question Type : **MCQ**
Question ID : **37135117074**
Option 1 ID : **37135168295**
Option 2 ID : **37135168294**
Option 3 ID : **37135168293**
Option 4 ID : **37135168296**
Status : **Answered**
Chosen Option : **2**

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Q.43 Which among the following is an example of metal-sparingly soluble salt electrode?

Ans

1. $OH^-_{(aq.)} \mid O_{2(g)}, Pt$

2. $Cl^-_{(aq.)} \mid AgCl_{(s)} \mid Ag_{(s)}$

3. $Zn^{2+}_{(aq.)} \mid Zn_{(s)}$

4. $Cu^+_{(aq.)}, Cu^{2+}_{(aq.)} \mid Pt$

Question Type : **MCQ**
Question ID : **37135117094**
Option 1 ID : **37135168374**
Option 2 ID : **37135168375**
Option 3 ID : **37135168373**
Option 4 ID : **37135168376**
Status : **Answered**
Chosen Option : **2**

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Q.44 In the reaction $2N_2O_{5(g)} \longrightarrow 4NO_{2(g)} + O_{2(g)}$ the rate of formation of $NO_{2(g)}$ and $O_{2(g)}$ are in the ratio of

Ans

1. 1:4 ✔
2. 1:1 ✘
3. 6:1 ✘
4. 4:1 ✘

Question Type : **MCQ**
Question ID : **37135117052**
Option 1 ID : **37135168206**
Option 2 ID : **37135168207**
Option 3 ID : **37135168208**
Option 4 ID : **37135168205**
Status : **Answered**
Chosen Option : **1**

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Q.45 Standard enthalpy of formation of water is -286 kJ mol^{-1}. When 1800 mg of water is formed from its constituent elements in their standard states the amount of energy liberated is

Ans

✗ 1. 2·86 kJ

✗ 2. 5·72 kJ

✗ 3. 57·2 kJ

✓ 4. 28·6 kJ

Question Type : **MCQ**
Question ID : **37135117053**
Option 1 ID : **37135168210**
Option 2 ID : **37135168212**
Option 3 ID : **37135168211**
Option 4 ID : **37135168209**
Status : **Answered**
Chosen Option : **4**

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Q.46

How much part of an atom occupies each corner of bcc unit cell ?

Ans

1. $1/4$

2. $1/8$

3. $1/2$

4. $1/6$

Question Type : **MCQ**
Question ID : **37135117084**
Option 1 ID : **37135168334**
Option 2 ID : **37135168336**
Option 3 ID : **37135168333**
Option 4 ID : **37135168335**
Status : **Answered**
Chosen Option : **2**

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Q.47

Identify the reducing agent in following reaction.

$$CH_{4(g)} + O_{2(g)} \longrightarrow CO_{2(g)} + 2H_2O_{(l)}$$

Ans

✗ 1. $CO_{2(g)}$

✗ 2. $H_2O_{(l)}$

✗ 3. $O_{2(g)}$

✓ 4. $CH_{4(g)}$

Question Type : **MCQ**
Question ID : **37135117056**
Option 1 ID : **37135168223**
Option 2 ID : **37135168224**
Option 3 ID : **37135168222**
Option 4 ID : **37135168221**
Status : **Answered**
Chosen Option : **4**

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Q.48 Half-life of first order reaction $X \longrightarrow Y + Z$ is 3 minutes. What is the time required to reduce the concentration of 'X' by 90 % of it's initial concentration ?

Ans

1. 4·12 minutes

2. 9·969 minutes

3. 9·105 minutes

4. 12·05 minutes

Question Type : **MCQ**
Question ID : **37135117063**
Option 1 ID : **37135168252**
Option 2 ID : **37135168250**
Option 3 ID : **37135168249**
Option 4 ID : **37135168251**
Status : **Answered**
Chosen Option : **2**

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Q.49

Which is an example of molecular hydride?

Ans

1. KH

2. NaH

3. HF

4. LiH

Question Type : **MCQ**
Question ID : **37135117092**
Option 1 ID : **37135168365**
Option 2 ID : **37135168366**
Option 3 ID : **37135168368**
Option 4 ID : **37135168367**
Status : **Answered**
Chosen Option : **3**

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Q.50 Which among the following amino acids has a lowest molecular mass?

Ans

1. Proline

2. Aspartic acid

3. Serine

4. Glycine

Question Type : **MCQ**
Question ID : **37135117088**
Option 1 ID : **37135168350**
Option 2 ID : **37135168352**
Option 3 ID : **37135168349**
Option 4 ID : **37135168351**
Status : **Answered**
Chosen Option : **3**

Section : **Mathematics**

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Q.1 If $Z = 10x + 25y$ subject to $0 \le x \le 3,\ 0 \le y \le 3,\ x + y \le 5, x \ge 0, y \ge 0$ then z is maximum at the point

Ans

✗ 1. $(2, 4)$

✗ 2. $(1, 6)$

✓ 3. $(2, 3)$

✗ 4. $(4, 3)$

Question Type : **MCQ**
Question ID : **37135117124**
Option 1 ID : **37135168494**
Option 2 ID : **37135168496**
Option 3 ID : **37135168495**
Option 4 ID : **37135168493**
Status : **Answered**
Chosen Option : **3**

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Q.2 A problem in statistics is given to three students P, Q and R. Their chances of solving the problem are $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ respectively. If all of them try independently, then the probability that the problem is solved, is

Ans

✗ 1. $\frac{2}{3}$

✗ 2. $\frac{1}{2}$

✓ 3. $\frac{3}{4}$

✗ 4. $\frac{1}{4}$

Question Type : **MCQ**
Question ID : **37135117148**
Option 1 ID : **37135168589**
Option 2 ID : **37135168591**
Option 3 ID : **37135168592**
Option 4 ID : **37135168590**
Status : **Answered**
Chosen Option : **3**

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Q.3

The differential equation of the circles having their centres on the line y = 8 and touching the X-axis is

Ans

1. $(y-8)^2[1-\left(\frac{dy}{dx}\right)^2]=64$

2. $(y-8)^2[1+\left(\frac{dy}{dx}\right)^2]=64$

3. $(y-8)[1+\left(\frac{dy}{dx}\right)^2]=64$

4. $y^2\left(1+\frac{dy}{dx}\right)=64$

Question Type : **MCQ**
Question ID : **37135117108**
Option 1 ID : **37135168432**
Option 2 ID : **37135168431**
Option 3 ID : **37135168430**
Option 4 ID : **37135168429**
Status : **Marked For Review**
Chosen Option : **2**

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Q.4

The value of $\cos^{-1}\left(cos\left(\frac{7\pi}{6}\right)\right)$ is

Ans

✔ 1. $\frac{5\pi}{6}$

✘ 2. $\frac{\pi}{3}$

✘ 3. $\frac{7\pi}{6}$

✘ 4. $\frac{\pi}{6}$

Question Type : **MCQ**
Question ID : **37135117118**
Option 1 ID : **37135168470**
Option 2 ID : **37135168471**
Option 3 ID : **37135168469**
Option 4 ID : **37135168472**
Status : **Answered**
Chosen Option : **4**

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Q.5

The function $f(x) = (x+2)\ e^{-x}$ is

Ans

1. decreasing in $(-\infty, -1)$ and increasing in $(-1, \infty)$

2. decreasing for all x

3. increasing in $(-\infty, -1)$ and decreasing in $(-1, \infty)$

4. increasing for all x

Question Type : **MCQ**
Question ID : **37135117121**
Option 1 ID : **37135168483**
Option 2 ID : **37135168481**
Option 3 ID : **37135168484**
Option 4 ID : **37135168482**
Status : **Answered**
Chosen Option : **3**

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Q.6 The integrating factor of differential equation $(1 + y + x^2y)\ dx\ +\ (x + x^3)\ dy = 0$ is

Ans

✗ 1. $\frac{1}{x}$

✓ 2. x

✗ 3. $logx$

✗ 4. e^x

Question Type : **MCQ**
Question ID : **37135117110**
Option 1 ID : **37135168440**
Option 2 ID : **37135168438**
Option 3 ID : **37135168437**
Option 4 ID : **37135168439**
Status : **Marked For Review**
Chosen Option : **2**

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Q.7

If the length of perpendicular drawn from the point $(4, 1)$ on the line $3x - 4y + k = 0$ is 2 units, then the values of k are

Ans

1. $2, -18$

2. $-2, -18$

3. $-2, 1$

4. $-2, 18$

Question Type : **MCQ**
Question ID : **37135117138**
Option 1 ID : **37135168549**
Option 2 ID : **37135168551**
Option 3 ID : **37135168552**
Option 4 ID : **37135168550**
Status : **Answered**
Chosen Option : **4**

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Q.8

The principal solutions of $cos2x = \frac{-1}{2}$ are

Ans

1. $x = \frac{-2\pi}{3}, \ x = \frac{4\pi}{3}$

2. $x = \frac{\pi}{3}, \quad x = \frac{2\pi}{3}$

3. $x = \frac{-\pi}{3}, \quad x = \frac{5\pi}{6}$

4. $x = \frac{\pi}{3}, \quad x = \frac{7\pi}{6}$

Question Type : **MCQ**
Question ID : **37135117102**
Option 1 ID : **37135168405**
Option 2 ID : **37135168407**
Option 3 ID : **37135168406**
Option 4 ID : **37135168408**
Status : **Answered**
Chosen Option : **2**

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Q.9

$$\int_0^1 x(1-x)^5\,dx =$$

Ans

1. $\frac{1}{7}$

2. $-\frac{1}{42}$

3. $\frac{1}{42}$

4. $\frac{1}{6}$

Question Type : **MCQ**
Question ID : **37135117122**
Option 1 ID : **37135168485**
Option 2 ID : **37135168488**
Option 3 ID : **37135168486**
Option 4 ID : **37135168487**
Status : **Answered**
Chosen Option : **1**

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Q.10

The dual of a statement 'Mangoes are delicious but expensive' is

Ans

1. Mangoes are delicious or Mangoes are not expensive.

2. Mangoes are not delicious and Mangoes are not expensive.

3. Mangoes are delicious or Mangoes are expensive.

4. Mangoes are delicious and Mangoes are expensive.

Question Type : **MCQ**
Question ID : **37135117134**
Option 1 ID : **37135168536**
Option 2 ID : **37135168535**
Option 3 ID : **37135168534**
Option 4 ID : **37135168533**
Status : **Answered**
Chosen Option : **3**

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Q.11

If $AX = B$, where $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 4 \\ 1 & 3 & 4 \end{bmatrix}$, $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$ and $B = \begin{bmatrix} 12 \\ 15 \\ 13 \end{bmatrix}$, then $x^2 + y^2 + z^2 =$

Ans

✔ 1. 14

✘ 2. 19

✘ 3. 21

✘ 4. 6

Question Type : **MCQ**
Question ID : **37135117119**
Option 1 ID : **37135168474**
Option 2 ID : **37135168476**
Option 3 ID : **37135168475**
Option 4 ID : **37135168473**
Status : **Answered**
Chosen Option : **1**

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Q.12 The bacteria increases at the rate proportional to the number of bacteria present. If the original number 'N' doubles in 4 hours then the number of bacteria in 12 hours will be

Ans

1. $3\,N$

2. $4\,N$

3. $6\,N$

4. $8\,N$

Question Type : **MCQ**
Question ID : **37135117147**
Option 1 ID : **37135168587**
Option 2 ID : **37135168588**
Option 3 ID : **37135168586**
Option 4 ID : **37135168585**
Status : **Answered**
Chosen Option : **4**

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Q.13 The angle between the lines $\bar{r} = (2\hat{i} + \hat{j} - 3\hat{k}) + \lambda(\hat{i} - \hat{j} + \hat{k})$ and $\frac{x-1}{1} = \frac{y+2}{3} = \frac{z-3}{2}$

is

Ans

1. $\frac{\pi}{6}$

2. $\frac{\pi}{3}$

3. $\frac{\pi}{4}$

4. $\frac{\pi}{2}$

Question Type : **MCQ**
Question ID : **37135117139**
Option 1 ID : **37135168554**
Option 2 ID : **37135168553**
Option 3 ID : **37135168555**
Option 4 ID : **37135168556**
Status : **Answered**
Chosen Option : **4**

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Q.14 The equation of the line passing through the point $(1, 2, 3)$ and perpendicular to the lines $\frac{x-1}{1} = \frac{y-2}{2} = \frac{z-3}{3}$ and $\bar{r} = \lambda(-3\hat{i} + 2\hat{j} + 5\hat{k})$ is

Ans

✗ 1.

$$\bar{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} + 7\hat{j} - 4\hat{k})$$

✗ 2.

$$\bar{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} + 7\hat{j} + 4\hat{k})$$

✗ 3.

$$\bar{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} - 7\hat{j} - 4\hat{k})$$

✓ 4.

$$\bar{r} = (\hat{i} + 2\hat{j} + 3\hat{k}) + \lambda(2\hat{i} - 7\hat{j} + 4\hat{k})$$

Question Type : **MCQ**
Question ID : **37135117146**
Option 1 ID : **37135168582**
Option 2 ID : **37135168581**
Option 3 ID : **37135168584**
Option 4 ID : **37135168583**
Status : **Answered**
Chosen Option : **4**

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Q.15

The derivative of $\cot^{-1} x$ w.r.t $log(1+x^2)$ is

Ans

1. $-2x$

2. $-\frac{1}{2x}$

3. $\frac{1}{2x}$

4. $2x$

Question Type : **MCQ**
Question ID : **37135117144**
Option 1 ID : **37135168575**
Option 2 ID : **37135168576**
Option 3 ID : **37135168574**
Option 4 ID : **37135168573**
Status : **Answered**
Chosen Option : **2**

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Q.16 The sum of first four terms of a G.P. is 160 and the common ratio is 3, then the 4th term is

Ans

✗ 1. 118

✗ 2. 100

✓ 3. 108

✗ 4. 102

Question Type : **MCQ**
Question ID : **37135117120**
Option 1 ID : **37135168479**
Option 2 ID : **37135168478**
Option 3 ID : **37135168477**
Option 4 ID : **37135168480**
Status : **Marked For Review**
Chosen Option : **3**

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Q.17 If the radius of a circular blot of oil is increasing at the rate of 2 cm/min, then the rate of change of its area when its radius is 3 cms is

Ans

✗ 1. $10\pi\ cm^2/min$

✓ 2. $12\pi\ cm^2/min$

✗ 3. $14\pi\ cm^2/min$

✗ 4. $16\pi\ cm^2/min$

Question Type : **MCQ**
Question ID : **37135117132**
Option 1 ID : **37135168525**
Option 2 ID : **37135168526**
Option 3 ID : **37135168527**
Option 4 ID : **37135168528**
Status : **Answered**
Chosen Option : **2**

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Q.18

If $\int_{1}^{k} (3x^2 + 2x + 1)\,dx = 11$, then k =

Ans

✗ 1. $\frac{1}{2}$

✗ 2. -2

✗ 3. $-\frac{1}{2}$

✓ 4. 2

Question Type : **MCQ**
Question ID : **37135117115**
Option 1 ID : **37135168459**
Option 2 ID : **37135168457**
Option 3 ID : **37135168460**
Option 4 ID : **37135168458**
Status : **Answered**
Chosen Option : **4**

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Q.19

If L.M.V.T. is applicable for the function $f(x) = x + \frac{1}{x}$, $x \in [1, 3]$, then $c =$

Ans

1. $-\sqrt{3}$

2. $\sqrt{3}$

3. 2

4. $\sqrt{2}$

Question Type : **MCQ**
Question ID : **37135117127**
Option 1 ID : **37135168508**
Option 2 ID : **37135168506**
Option 3 ID : **37135168505**
Option 4 ID : **37135168507**
Status : **Answered**
Chosen Option : **2**

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Q.20 The separate equations of the lines represented by $4x^2 - y^2 + 2x + y = 0$ are

Ans

1. $2x - 2y + 1 = 0 \quad , \; x + 2y = 0$

2. $2x - y + 1 = 0 \quad , \; 2x + y = 0$

3. $2x - y + 1 = 0 \quad , \; 2x - y = 0$

4. $2x - y = 0 \quad , \; 2x + y + 1 = 0$

Question Type : **MCQ**
Question ID : **37135117106**
Option 1 ID : **37135168423**
Option 2 ID : **37135168422**
Option 3 ID : **37135168421**
Option 4 ID : **37135168424**
Status : **Answered**
Chosen Option : **2**

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Q.21 A body is heated to 110°C and placed in air at 10°C. After 1 hour its temperature is 60°C. The additional time required for it to cool to 30°C is

Ans

1. $\left(\frac{log\ 2}{log\ 5}+1\right)$ hours

2. $\left(\frac{log\ 5}{log\ 2}\right)$ hours

3. $\left(\frac{log\ 5}{log\ 2}-1\right)$ hours

4. $\left(\frac{log\ 2}{log\ 5}\right)$ hours

Question Type : **MCQ**
Question ID : **37135117126**
Option 1 ID : **37135168503**
Option 2 ID : **37135168502**
Option 3 ID : **37135168501**
Option 4 ID : **37135168504**
Status : **Marked For Review**
Chosen Option : **2**

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Q.22

If a function $f: R \to R$ is defined by $f(x) = \frac{4x}{5} + 3$, then $f^{-1}(x) =$

Ans

1. $\frac{5(x+3)}{4}$

2. $\frac{5(x-3)}{4}$

3. $\frac{4(x+3)}{5}$

4. $\frac{4(x-3)}{5}$

Question Type : **MCQ**
Question ID : **37135117104**
Option 1 ID : **37135168416**
Option 2 ID : **37135168413**
Option 3 ID : **37135168415**
Option 4 ID : **37135168414**
Status : **Answered**
Chosen Option : **2**

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Q.23

$$\int \frac{dx}{1+\sqrt{x}} =$$

Ans

1. $2\sqrt{x} - 2\,log\,|1+\sqrt{x}| + c$

2. $\sqrt{x} + log\,|1+\sqrt{x}| + c$

3. $2\sqrt{x} + log\,|1+\sqrt{x}| + c$

4. $\sqrt{x} - log\,|1+\sqrt{x}| + c$

Question Type : **MCQ**
Question ID : **37135117142**
Option 1 ID : **37135168568**
Option 2 ID : **37135168566**
Option 3 ID : **37135168567**
Option 4 ID : **37135168565**
Status : **Answered**
Chosen Option : **1**

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Q.24

$$\int_{-2}^{2} [x]\, dx =$$

where $[x]$ is the greatest integer function

Ans

✗ 1. 2

✗ 2. 4

✓ 3. -2

✗ 4. 0

Question Type : **MCQ**
Question ID : **37135117112**
Option 1 ID : **37135168445**
Option 2 ID : **37135168447**
Option 3 ID : **37135168446**
Option 4 ID : **37135168448**
Status : **Answered**
Chosen Option : **3**

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Q.25 $\int \frac{x^2+1}{(x-3)(x-2)}\,dx = Px + Q\,log|x-3| + R\,log|x-2| + c$, where c is constant of integration, then the values of P, Q, R are , respectively

Ans

✗ 1. $0, 10, 5$

✗ 2. $0, 10, -5$

✗ 3. $1, 10, 5$

✓ 4. $1, 10, -5$

Question Type : **MCQ**
Question ID : **37135117113**
Option 1 ID : **37135168449**
Option 2 ID : **37135168450**
Option 3 ID : **37135168451**
Option 4 ID : **37135168452**
Status : **Answered**
Chosen Option : **1**

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Q.26 If $f: R \to R$ is given by $f(x) = 7x + 8$ and $f^{-1}(12) = \frac{k}{7}$, then the value of k is

Ans

1. 7

2. 1

3. 4

4. 8

Question Type : **MCQ**
Question ID : **37135117123**
Option 1 ID : **37135168491**
Option 2 ID : **37135168489**
Option 3 ID : **37135168490**
Option 4 ID : **37135168492**
Status : **Answered**
Chosen Option : **3**

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Q.27

The negation of the statement "If $5 < 7$ and $7 > 2$, then $5 > 2$" is

Ans

1. $5 < 7$ and $7 > 2$ and $5 \leq 2$

2. $5 < 7$ and $7 > 2$ or $5 < 2$

3. $5 < 7$ and $7 > 2$ and $5 > 2$

4. $5 < 7$ and $7 > 2$ or $5 \leq 2$

Question Type : **MCQ**
Question ID : **37135117145**
Option 1 ID : **37135168580**
Option 2 ID : **37135168578**
Option 3 ID : **37135168577**
Option 4 ID : **37135168579**
Status : **Answered**
Chosen Option : **1**

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Q.28 If B is end point of minor axis of the ellipse $b^2x^2 + a^2y^2 = a^2b^2\ (a > b)$ and S and S' are foci of ellipse such that $\Delta SBS'$ is an equilateral triangle, then eccentricity e =

Ans

✔ 1. $\frac{1}{2}$

✘ 2. $\frac{1}{3}$

✘ 3. $\frac{3}{5}$

✘ 4. $\frac{4}{5}$

Question Type : **MCQ**
Question ID : **37135117133**
Option 1 ID : **37135168529**
Option 2 ID : **37135168530**
Option 3 ID : **37135168531**
Option 4 ID : **37135168532**
Status : **Answered**
Chosen Option : **1**

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Q.29

If a, b, c are distinct positive numbers and vectors $a\hat{i} + a\hat{j} + c\hat{k}, \hat{i} + \hat{k}$ and $c\hat{i} + c\hat{j} + b\hat{k}$ lie in a plane, then

Ans

1. c is A.M. of a and b

2. $c^2 = 0$

3. c is H.M. of a and b

4. c is G.M. of a and b

Question Type : **MCQ**
Question ID : **37135117125**
Option 1 ID : **37135168497**
Option 2 ID : **37135168500**
Option 3 ID : **37135168499**
Option 4 ID : **37135168498**
Status : **Answered**
Chosen Option : **4**

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Q.30

The order and degree of the differential equation $\sqrt{1+\frac{1}{\left(\frac{dy}{dx}\right)^2}}=\left(\frac{d^2y}{dx^2}\right)^{\frac{3}{2}}$ are respectively

Ans

1. 3, 2

2. 2, 3

3. 2, 2

4. 3, 3

Question Type : **MCQ**
Question ID : **37135117135**
Option 1 ID : **37135168538**
Option 2 ID : **37135168537**
Option 3 ID : **37135168539**
Option 4 ID : **37135168540**
Status : **Answered**
Chosen Option : **2**

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Q.31

The derivative of $\sin^{-1}\left(\frac{\sqrt{1+x}+\sqrt{1-x}}{2}\right)$ w.r.t. $\cos^{-1} x$ is

Ans

1. $\frac{1}{2}$

2. $-\frac{1}{2}$

3. -1

4. 1

Question Type : **MCQ**
Question ID : **37135117137**
Option 1 ID : **37135168547**
Option 2 ID : **37135168548**
Option 3 ID : **37135168545**
Option 4 ID : **37135168546**
Status : **Answered**
Chosen Option : **1**

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Q.32

If $x^2+y^2=t+\frac{1}{t}$, $x^4+y^4=t^2+\frac{1}{t^2}$ then $\frac{dy}{dx}=$

Ans

1. $-\frac{y}{x}$

2. $\frac{y}{x}$

3. $\frac{x}{2y}$

4. $-\frac{x}{2y}$

Question Type : **MCQ**
Question ID : **37135117141**
Option 1 ID : **37135168562**
Option 2 ID : **37135168563**
Option 3 ID : **37135168561**
Option 4 ID : **37135168564**
Status : **Answered**
Chosen Option : **1**

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Q.33 The distance of a point $(1, 2, -1)$ from the plane $x - 2y + 4z + 10 = 0$ is

Ans

✗ 1. $\frac{3}{\sqrt{7}}$ units

✗ 2. $\frac{\sqrt{3}}{7}$ units

✗ 3. $\sqrt{\frac{7}{3}}$ units

✓ 4. $\sqrt{\frac{3}{7}}$ units

Question Type : **MCQ**
Question ID : **37135117136**
Option 1 ID : **37135168541**
Option 2 ID : **37135168543**
Option 3 ID : **37135168542**
Option 4 ID : **37135168544**
Status : **Answered**
Chosen Option : **4**

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Q.34

If $f'(x) = k(cosx - sinx)$, $f'(0) = 3$, $f\left(\frac{\pi}{2}\right) = 15$, then $f(x) =$

Ans

1. $3(sinx + cosx) + 12$

2. $3(sinx + cosx) - 12$

3. $-3(sinx + cosx) - 12$

4. $12(sinx + cosx) + 3$

Question Type : **MCQ**
Question ID : **37135117117**
Option 1 ID : **37135168465**
Option 2 ID : **37135168467**
Option 3 ID : **37135168468**
Option 4 ID : **37135168466**
Status : **Answered**
Chosen Option : **1**

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Q.35 The direction ratios of the line perpendicular to the lines having direction ratios 2, 3, 1 and 1, 2, 1 are

Ans

1. $-2,\ 1,\ 1$

2. $1,\ 1,\ 1$

3. $1,\ -1,\ 1$

4. $2,\ 2,\ -2$

Question Type : **MCQ**
Question ID : **37135117149**
Option 1 ID : **37135168595**
Option 2 ID : **37135168593**
Option 3 ID : **37135168594**
Option 4 ID : **37135168596**
Status : **Answered**
Chosen Option : **3**

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Q.36

If ω is a complex cube root of unity and $A = \begin{bmatrix} \omega & 0 \\ 0 & \omega \end{bmatrix}$, then $A^{-1} =$

Ans

1. A^2 ✔

2. $2A$ ✘

3. $-A$ ✘

4. A ✘

Question Type : **MCQ**
Question ID : **37135117140**
Option 1 ID : **37135168560**
Option 2 ID : **37135168558**
Option 3 ID : **37135168559**
Option 4 ID : **37135168557**
Status : **Answered**
Chosen Option : **3**

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Q.37 The c.d.f. $F(x)$ of discrete r.v. X is given by

X	-3	-1	0	1	3	5	7	9
F(X)	$0 \cdot 1$	$0 \cdot 3$	$0 \cdot 5$	$0 \cdot 65$	$0 \cdot 75$	$0 \cdot 85$	$0 \cdot 90$	1

then $P[X = 3] =$

Ans

✗ 1. 0·85

✓ 2. 0·10

✗ 3. 0·75

✗ 4. 0·65

Question Type : **MCQ**
Question ID : **37135117131**
Option 1 ID : **37135168524**
Option 2 ID : **37135168521**
Option 3 ID : **37135168522**
Option 4 ID : **37135168523**
Status : **Answered**
Chosen Option : **2**

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Q.38 The joint equation of bisectors of the angle between the lines represented by $3x^2 + 2xy - y^2 = 0$ is

Ans

1. $x^2 - 4xy - y^2 = 0$

2. $x^2 + 4xy - y^2 = 0$

3. $x^2 - 4xy + y^2 = 0$

4. $x^2 + 4xy + y^2 = 0$

Question Type : **MCQ**
Question ID : **37135117103**
Option 1 ID : **37135168412**
Option 2 ID : **37135168410**
Option 3 ID : **37135168411**
Option 4 ID : **37135168409**
Status : **Answered**
Chosen Option : **1**

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Q.39 If $\bar{a}, \bar{b}, \bar{c}$ are nonzero vectors along the coterminus edges of a parallelopiped with volume 7 cubic units, then the volume of a parallelopiped with $\bar{a}+\bar{b}, \bar{b}+\bar{c}, \bar{c}+\bar{a}$ as the coterminus edges is

Ans

1. 49 cubic units

2. 2 cubic units

3. 14 cubic units

4. 7 cubic units

Question Type : **MCQ**
Question ID : **37135117130**
Option 1 ID : **37135168519**
Option 2 ID : **37135168520**
Option 3 ID : **37135168518**
Option 4 ID : **37135168517**
Status : **Answered**
Chosen Option : **3**

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Q.40

If $f(x) = \frac{4\sin \pi x}{5x}$ for $x \neq 0$

$= 2k$ for $x = 0$

is continuous at $x = 0$, then the value of k is

Ans

1. $\frac{2\pi}{5}$

2. $\frac{\pi}{5}$

3. $\frac{\pi}{10}$

4. $\frac{4\pi}{5}$

Question Type : **MCQ**
Question ID : **37135117150**
Option 1 ID : **37135168598**
Option 2 ID : **37135168600**
Option 3 ID : **37135168599**
Option 4 ID : **37135168597**
Status : **Answered**
Chosen Option : **1**

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Q.41

If $3sin^2x - 8sinx + 4 = 0$, $x \in \left(\frac{\pi}{2}, \pi\right)$, then $tanx =$

Ans

1. $-\frac{\sqrt{5}}{2}$

2. $\frac{2}{\sqrt{5}}$

3. $-\frac{2}{\sqrt{5}}$

4. $\frac{\sqrt{5}}{2}$

Question Type : **MCQ**
Question ID : **37135117143**
Option 1 ID : **37135168572**
Option 2 ID : **37135168569**
Option 3 ID : **37135168570**
Option 4 ID : **37135168571**
Status : **Answered**
Chosen Option : **3**

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Q.42 If the points $A(2,1,-1)$, $B(0,-1,0)$, $C(4,0,4)$ and $D(2,0,x)$ are coplanar, then $x =$

Ans

1. 2

2. 1

3. 4

4. 3

Question Type : **MCQ**
Question ID : **37135117101**
Option 1 ID : **37135168402**
Option 2 ID : **37135168401**
Option 3 ID : **37135168404**
Option 4 ID : **37135168403**
Status : **Answered**
Chosen Option : **2**

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Q.43 The area of the region bounded by the parabola $x^2 = 16y,\ y = 1, y = 4$ and the Y-axis lying in the first quartrant is

Ans

1. $\frac{55}{3}$ sq. units

2. $\frac{56}{3}$ sq. units

3. $\frac{52}{3}$ sq. units

4. $\frac{53}{3}$ sq. units

Question Type : **MCQ**
Question ID : **37135117111**
Option 1 ID : **37135168442**
Option 2 ID : **37135168441**
Option 3 ID : **37135168444**
Option 4 ID : **37135168443**
Status : **Answered**
Chosen Option : **2**

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Q.44

$cosec2\theta - cot2\theta =$

Ans

1. $tan\theta$

2. $sin2\theta$

3. $cos\theta$

4. $tan2\theta$

Question Type : **MCQ**
Question ID : **37135117128**
Option 1 ID : **37135168511**
Option 2 ID : **37135168509**
Option 3 ID : **37135168510**
Option 4 ID : **37135168512**
Status : **Answered**
Chosen Option : **1**

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Q.45

The eccentricity of a rectangular hyperbola is

Ans

✗ 1. 2

✗ 2. $2\sqrt{2}$

✗ 3. 1

✓ 4. $\sqrt{2}$

Question Type : **MCQ**
Question ID : **37135117109**
Option 1 ID : **37135168434**
Option 2 ID : **37135168436**
Option 3 ID : **37135168433**
Option 4 ID : **37135168435**
Status : **Answered**
Chosen Option : **4**

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Q.46

If the p.m.f. of a r.v. X is

x	0	1	2
P(X= x)	q^2	$2pq$	p^2

then, the standard deviation of X is (given $p+q=1$)

Ans

1. $2\sqrt{q}$

2. $\sqrt{2pq}$

3. $2\sqrt{p}$

4. $\sqrt{pq}$

Question Type : **MCQ**
Question ID : **37135117105**
Option 1 ID : **37135168418**
Option 2 ID : **37135168420**
Option 3 ID : **37135168417**
Option 4 ID : **37135168419**
Status : **Answered**
Chosen Option : **2**

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Q.47 If A and B are two angles such that A, B, $\in (0, \pi)$ and they are not supplementary angles such that $\sin A - \sin B = 0$, then

Ans

✗ 1. $A - B = \frac{\pi}{3}$

✗ 2. $A - B = \frac{\pi}{2}$

✓ 3. $A = B$

✗ 4. $A \neq B$

Question Type : **MCQ**
Question ID : **37135117116**
Option 1 ID : **37135168461**
Option 2 ID : **37135168464**
Option 3 ID : **37135168463**
Option 4 ID : **37135168462**
Status : **Answered**
Chosen Option : **2**

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Q.48 The co-ordinates of the point where the line $\frac{x-1}{2}=\frac{y-2}{-3}=\frac{z+3}{4}$ meet the plane $2x+4y-z=1$ are

Ans

1. $(3,-1,-1)$

2. $(3,-1,1)$

3. $(3,1,-1)$

4. $(-2,1,-1)$

Question Type : **MCQ**
Question ID : **37135117129**
Option 1 ID : **37135168513**
Option 2 ID : **37135168516**
Option 3 ID : **37135168514**
Option 4 ID : **37135168515**
Status : **Answered**
Chosen Option : **2**

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Q.49

The general solutions of $sin^2x \cdot secx = tanx - sinx + 1$ is

Ans

1. $x = n\pi + (-1)^n \frac{\pi}{4}$ or $x = m\pi + \frac{3\pi}{4}$; $m, n \in z$

2. $x = n\pi + (-1)^n \frac{\pi}{2}$ or $x = m\pi + \frac{3\pi}{4}$; $m, n \in z$

3. $x = n\pi + (-1)^n \frac{\pi}{2}$ or $x = m\pi + \frac{5\pi}{4}$; $m, n \in z$

4. $x = n\pi + (-1)^n \frac{\pi}{4}$ or $x = m\pi + \frac{5\pi}{4}$; $m, n \in z$

Question Type : **MCQ**
Question ID : **37135117114**
Option 1 ID : **37135168455**
Option 2 ID : **37135168453**
Option 3 ID : **37135168454**
Option 4 ID : **37135168456**
Status : **Marked For Review**
Chosen Option : **1**

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Q.50

Given $X \sim B(n, p)$, If $E(X)=4$ and $Var(X)=2{\cdot}4$, then $n =$

Ans

1. 20

2. 15

3. 5

4. 10

Question Type :	**MCQ**
Question ID :	**37135117107**
Option 1 ID :	**37135168428**
Option 2 ID :	**37135168427**
Option 3 ID :	**37135168425**
Option 4 ID :	**37135168426**
Status :	**Answered**
Chosen Option :	**4**

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